

REMARKS

The Applicants respectfully request reconsideration of the present Application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1-14 have been rejected. Claim 1 has been amended. No new matter has been added. Accordingly, Claims 1-14 remain pending in the present application.

This amendment adds, changes and/or deletes one or more claims in this Application. A detailed listing of claims that are, or were, in the Application, irrespective of whether the claim(s) remain under examination in the Application, is presented, with an appropriate defined status identifier.

Claim Rejections – 35 U.S.C. § 102

On page 2 of the Office Action, the Examiner rejected Claims 8-11 under 35 U.S.C. § 102(b) as being anticipated by EP899801 titled “Battery separator having a puncture-proof border” to Hercamp et al. (“Hercamp et al.”).

Hercamp et al. is directed to a “Battery Separator Having a Puncture-Proof Border” including an “sheet of separator material” that includes “a plurality of primary ribs 24 which extend across the faces of the separator” and “lateral borders 26A and 26B which overlie, and sandwich therebetween, the lateral edges 28A and 28B” of a “plate” (see Hercamp et al. at col. 3, lines 4-11; and Figure 1). The “border 26B comprises a plurality of closely spaced secondary, puncture-proofing ribs 44” that have a “height Y above the face 40 of the separator, where Y is less than the height X of the plate-spacing ribs 24” (see Hercamp et al. at col. 3, lines 44-56).

Claim 8 (as amended) is in independent form and recites a “lead storage battery” comprising, in combination with other elements, a “separator” having “a plurality of main ribs” that are “spaced apart at substantially regular intervals,” a “plurality of reinforcing ribs . . . in the area of the lateral edge portions, the reinforcing ribs having a lower height than the main ribs and being substantially parallel to one another,” and “an additional rib provided on

the base sheet in each of the areas of the lateral edge portions and in contact with a lateral edge portion, the additional ribs having substantially the same height as the main ribs and being substantially parallel to the main ribs.” Claims 9-11 depend from independent Claim 8.

Hercamp et al. does not identically disclose a “lead storage battery” comprising, among other elements, an “additional rib provided on the base sheet in each of the areas of the lateral edge portions and in contact with a lateral edge portion, the additional ribs having substantially the same height as the main ribs and being substantially parallel to the main ribs” as recited in independent Claim 8. Nevertheless, the Examiner stated:

The outermost main ribs (corresponding to the claimed “additional ribs”) are arranged on the base sheet and contact the lateral edge portions of the positive electrode plates (38) (see paragraph 8; Figure 3).

The Applicants submit that the “outermost main ribs” of Hercamp et al. are not “in contact with a lateral edge portion” of a battery electrode, as recited in Claim 8, as clearly shown in Figure 3 of Hercamp et al. The rejection of Claim 8 over Hercamp et al. is improper. Claim 8 is patentable over Hercamp et al.

Dependent Claims 9-11, which depend from independent Claim 8, are also patentable. See 35 U.S.C. § 112 ¶ 4.

The Applicants respectfully request withdrawal of the rejection of Claims 8-11 under 35 U.S.C. § 102(b).

Claim Rejections – 35 U.S.C. § 103

1. Claims 12-14

On page 3 of the Office Action the Examiner rejected Claims 12-14 as being obvious under 35 U.S.C. § 103(a) over Hercamp et al.

The Examiner acknowledged that Hercamp et al. “does not expressly teach the exact height ranges recited in claim 12-14.” Nevertheless, the Examiner concluded that “the invention as a whole would have been obvious to one of ordinary skill in the art at the time

the invention was made because the disclosure of EP '801 would be sufficient to render the claimed ranges obvious to a skilled artisan.”

As described above, Hercamp et al. is directed to a “Battery Separator Having a Puncture-Proof Border” including an “sheet of separator material” that includes “a plurality of primary ribs 24 which extend across the faces of the separator” and “lateral borders 26A and 26B which overlie, and sandwich therebetween, the lateral edges 28A and 28B” of a “plate” (see Hercamp et al. at col. 3, lines 4-11; and Figure 1). The “border 26B comprises a plurality of closely spaced secondary, puncture-proofing ribs 44” that have a “height Y above the face 40 of the separator, where Y is less than the height X of the plate-spacing ribs 24” (see Hercamp et al. at col. 3, lines 44-56).

Claims 12-14 depend from independent Claim 8, which is in independent form and recites a “lead storage battery” comprising, in combination with other elements, a “separator” having “a plurality of main ribs” that are “spaced apart at substantially regular intervals,” a “plurality of reinforcing ribs . . . in the area of the lateral edge portions, the reinforcing ribs having a lower height than the main ribs and being substantially parallel to one another,” and “an additional rib provided on the base sheet in each of the areas of the lateral edge portions and in contact with a lateral edge portion, the additional ribs having substantially the same height as the main ribs and being substantially parallel to the main ribs.”

The “lead storage battery” recited in independent Claim 8 (as amended) would not have been obvious in view of Hercamp et al. under 35 U.S.C. § 103(a). Hercamp et al. does not disclose, teach or suggest a “lead storage battery” comprising, among other elements, an “additional rib provided on the base sheet in each of the areas of the lateral edge portions and in contact with a lateral edge portion, the additional ribs having substantially the same height as the main ribs and being substantially parallel to the main ribs” as recited in independent Claim 8. To transform the “separator” of Hercamp et al. into a “lead storage battery” comprising an “additional rib” (as recited in Claim 8) would require still further modification, and such modification is taught only by the Applicants’ own disclosure.

The “lead storage battery” recited in independent Claim 8, considered as a whole, would not have been obvious in view of Hercamp et al. The rejection of Claims 12-14 over Hercamp et al. under 35 U.S.C. § 103(a) is therefore improper. Therefore, Claims 12-14 are patentable over Hercamp et al. for at least the same reasons as described with respect to Claim 8. See 35 U.S.C. § 112 ¶ 4.

The Applicants respectfully request withdrawal of the rejection of Claims 12-14 under 35 U.S.C. § 103(a).

2. Claims 1-14

On page 4 of the Office Action the Examiner rejected Claims 1-14 as being obvious under 35 U.S.C. § 103(a) over DE 19804423 titled Kasner et al. (“Kasner et al.”) in view of Hercamp et al.

The Examiner stated:

Regarding claim 8, DE ‘423 is directed to a lead acid battery having a container, a positive electrode, a negative electrode, and an electrolyte (see abstract; first page of translation). Regarding claims 1 and 8, the battery comprises separators having a plurality of main ribs arranged at regular intervals on the outside (top) surface thereof (see Figure 3). The outermost main ribs (corresponding to the claimed “additional ribs”) are located in the vicinity of the edge of the separator. A negative electrode (4) is positioned on the opposite side of the separator (see Figure 3; page 3 of the translation). Regarding claims 2 and 9, the additional ribs are arranged symmetrically with respect to the main ribs (see Figure 3). Regarding claims 3 and 10, all the ribs are integral with the separator base sheet (see Fig. 2).

However, the Examiner acknowledged that:

DE ‘423 does not expressly teach that the separator comprises a plurality of shorter reinforcing ribs in the area of the lateral edge portions, as recited in claims 1 and 8, or that the additional ribs are located “in the region of” the reinforcing ribs, as recited in claim 1. The reference additionally does not expressly teach that the positive electrode comprises an expanded metal grid having lateral edge portions having open cut edges, as recited in

claims 4 and 11, or the heights of the main, additional, and reinforcing ribs, as recited in claims 5-7 and 12-14.

The Examiner stated with regard to Hercamp et al. that:

As noted above, EP '801 is directed to a lead-acid battery comprising a separator that comprises a plurality of small reinforcing ribs on the edges thereof

The Examiner then concluded that:

[t]he invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use small reinforcing ribs in an area surrounding the additional ribs of the separator of DE '423. In paragraph 4, EP '801 teaches that "the closely spaced ribs and concave furrows therebetween provide significant resistance to gridwire puncture." Thus, the artisan would be motivated to incorporate the reinforcing ribs of EP '801 in an edge region of the separator of DE '423, i.e., in a region surrounding the "additional" ribs, to reduce puncturing of the gridwire of the positive electrode. It should be noted that although DE '423 does not expressly teach electrode grids, such grids are conventional in lead-acid batteries and could reasonably be expected to be present in the electrodes of DE '423. Additionally, such grids would have "open cut edges," as taught in paragraph 3 of EP '801.

Kasner et al. is directed to an "electrical lead-acid battery" including "ribs 3" that extend from a different surface of a separator than "main ribs 1" and which are provided outward from the lateral edges of a negative electrode 4 (see, e.g., Kasner et al., Figure 3).

Hercamp et al. is directed to a "Battery Separator Having a Puncture-Proof Border" including an "sheet of separator material" that includes "a plurality of primary ribs 24 which extend across the faces of the separator" and "lateral borders 26A and 26B which overlie, and sandwich therebetween, the lateral edges 28A and 28B" of a "plate" (see Hercamp et al. at col. 3, lines 4-11; and Figure 1). The "border 26B comprises a plurality of closely spaced secondary, puncture-proofing ribs 44" that have a "height Y above the face 40 of the separator, where Y is less than the height X of the plate-spacing ribs 24" (see Hercamp et al. at col. 3, lines 44-56).

Claim 1 is in independent form and recites a “separator” comprising, in combination with other elements, a “plurality of main ribs arranged at regular intervals,” “a plurality of reinforcing ribs . . . lower in height than the main ribs, and located in the region which covers the lateral electrode edge portions,” and “an additional rib arranged on the base sheet at each lateral edge portion of the separator substantially parallel to the main ribs in the region of the reinforcing ribs, which ribs are of substantially the same height as the main ribs and bear against the lateral edge portions of the positive electrode.” Claims 2-7 depend from independent Claim 1.

Claim 8 (as amended) is in independent form and recites a “lead storage battery” comprising, in combination with other elements, a “separator” having “a plurality of main ribs” that are “spaced apart at substantially regular intervals,” a “plurality of reinforcing ribs . . . in the area of the lateral edge portions, the reinforcing ribs having a lower height than the main ribs and being substantially parallel to one another,” and “an additional rib provided on the base sheet in each of the areas of the lateral edge portions and in contact with a lateral edge portion, the additional ribs having substantially the same height as the main ribs and being substantially parallel to the main ribs.” Claims 9-14 depend from independent Claim 8.

The “separator” recited in independent Claim 1 would not have been obvious in view of Kasner et al., alone or in any proper combination with Hercamp et al. under 35 U.S.C. § 103(a). Kasner et al. alone or in any proper combination with Hercamp et al. does not disclose, teach or suggest a “separator” comprising, in combination with other elements, “an additional rib arranged on the base sheet at each lateral edge portion of the separator substantially parallel to the main ribs in the region of the reinforcing ribs, which ribs are of substantially the same height as the main ribs and bear against the lateral edge portions of the positive electrode.” To transform the “electrical lead-acid battery” of Kasner et al. and the “lead storage battery” of Hercamp et al. into a “separator” (as recited in Claim 1) would require still further modification, and such modification is taught only by the Applicants’ own disclosure. The suggestion to make the combination of Kasner et al. and Hercamp et al. has been taken from the Applicants’ own specification (using hindsight), which is improper.

The “separator” recited in independent Claim 1, considered as a whole, would not have been obvious in view of Kasner et al. and/or Hercamp et al.. The rejection of Claim 1 over Kasner et al. in view of Hercamp et al. under 35 U.S.C. § 103(a) is improper. Therefore, Claim 1 is patentable over Kasner et al. in view of Hercamp et al..

Dependent Claims 2-7, which depend from independent Claim 1, are also patentable. See 35 U.S.C. § 112 ¶ 4.

The “lead storage battery” recited in independent Claim 8 also would not have been obvious in view of Kasner et al., alone or in any proper combination with Hercamp et al. under 35 U.S.C. § 103(a). Kasner et al. alone or in any proper combination with Hercamp et al. does not disclose, teach or suggest a “lead storage battery” comprising, among other elements, an “additional rib provided on the base sheet in each of the areas of the lateral edge portions and in contact with a lateral edge portion, the additional ribs having substantially the same height as the main ribs and being substantially parallel to the main ribs” as recited in independent Claim 8. To transform the “electrical lead-acid battery” of Kasner et al. and the “lead storage battery” of Hercamp et al. into a “lead storage battery” (as recited in Claim 8) would require still further modification, and such modification is taught only by the Applicants’ own disclosure. The suggestion to make the combination of Kasner et al. and Hercamp et al. has been taken from the Applicants’ own specification (using hindsight), which is improper.

The “separator” recited in independent Claim 8, considered as a whole, would not have been obvious in view of Kasner et al. and/or Hercamp et al.. The rejection of Claim 8 over Kasner et al. in view of Hercamp et al. under 35 U.S.C. § 103(a) is improper. Therefore, Claim 8 is patentable over Kasner et al. in view of Hercamp et al..

Dependent Claims 9-14, which depend from independent Claim 8, are also patentable. See 35 U.S.C. § 112 ¶ 4.

The Applicants respectfully request withdrawal of the rejection of Claims 1-14 under 35 U.S.C. § 103(a).

* * *

It is submitted that each outstanding objection and rejection to the Application has been overcome, and that the Application is in a condition for allowance. Claims 1-14 will be pending in this Application. The Applicants request consideration and allowance of all pending Claims 1-14.

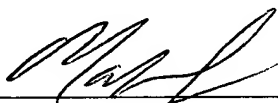
The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 06-1447. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1447. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 06-1447.

Respectfully submitted,

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